

REMARKS

Applicant has carefully reviewed the Official Action dated April 22, 2009 for the above identified patent application.

At page 2, paragraph 1 of the Official Action, the Examiner has objected to the drawing on the grounds that it does not show all features of the invention recited in the claims. More specifically, the Examiner states that the drawings do not illustrate a drill rod having a varying diameter, as recited in claim 2.

Applicant respectfully disagrees with the Examiner's conclusion. Neither claim 2 (or claim 12) recites that the diameter of the drill rod or the diameter of the hole being drilled is varied during drilling. Each and every hole has its own diameter, and each and every drill rod has a specific diameter for drilling a specific hole. The diameter of the hole being drilled, and the diameter of the rod used to drill the hole, does not vary during a specific drilling operation. On the contrary, dependent claims 2 and 12 recite that it is the flush power which is adjusted, depending on the diameter of the hole to be drilled and the diameter of the drill rod in a given drilling procedure. Stated in other words, the flush power will be different for drilling a hole of a given diameter in a first drilling procedure than the flush power for drilling a hole of a different diameter in a different procedure. Adjusting the flush power in dependence upon the diameters of the hole to be drilled and the drill rod used in different procedures does not imply or suggest that the hole to be drilled or the drill rod used to drill the hole will vary in diameter during a given drilling procedure.

Applicant respectfully submits that since neither dependent claim 2 or 12 recites that the diameter of the drill rod is varied during a given drilling procedure, it is unnecessary to illustrate this in the drawings. Applicant respectfully submits that the objection to the drawing is based upon a misinterpretation of claims 2 and 12, and respectfully requests that the objection to the drawing be reconsidered and withdrawn.

At page 3, paragraph 2 of the Official Action, claim 3 has been objected to on the grounds that the status identifier in the prior Amendment is incorrect. In the prior Amendment, claim 23 was designated as "currently", and not "currently amended", as a result of a typographical error. Claim 23 is now correctly identified as "previously presented" in the present Amendment.

At page 3, paragraph 4 of the Official Action, claims 1-23 have been rejected under 35 U.S.C. Section 112, second paragraph, as being indefinite. The Examiner's basis for the formal grounds of rejection is discussed in the Official Action.

With regard to the formal grounds of rejection raised against independent claims 1 and 11 at paragraph 4.a.iii. of the Official Action, independent claims 1 and 11 have been revised to delete the statement "such that total power consumption of each sub-process is controlled" at the end of each of these claims. This revision to the form of independent claims 1 and 11 overcomes the formal grounds of rejection raised at paragraph 4.a.iii. of the Official Action.

Applicant respectfully disagrees with the formal grounds of rejection raised against independent claims 1 and 11 at paragraphs 4.a. i. and ii. of the Official Action. Independent method claim 1 recites two steps in which at least two sub-processes are necessary to practice the steps of the claimed method. One of the sub-processes must be adjusting flush power at least partly as a function of the hole depth, as expressly recited in the first step of independent claim 1. The second step of the claimed method requires controlling at least either the percussion power or the rotational power, or both (and/or). However, control of the flush power cannot be construed in the alternative in the second step of the method defined by independent claim 1, since the first step of the claimed method positively recites that the flush power is adjusted, and therefore adjustment/control of the flush power is a necessary step positively recited in the claimed method. Stated in other words, independent method claim 1 can only be construed as 1). requiring the adjustment of the flush power (at least partly as a function of a hole depth) and 2). controlling either the percussion power or the rotational power or both the percussion power and rotational power. Applicant respectfully submits that the scope of independent claims 1 and 11 are definite and in compliance with 35 U.S.C. Section 112, second paragraph, and will be clearly understood by persons of ordinary skill in the relevant art.

As noted, independent claims 1 and 11 have been revised to overcome the formal ground of rejection raised at paragraph 4.a.iii. of the Official Action. It is now clear from both independent claims 1 and 11 that the percussion power or the rotational power, or both, are

controlled, and that the flush power is controlled. The reference to control of the total power consumption of each sub-process has been deleted from claims 1 and 11 to avoid any ambiguity.

With regard to the formal grounds of rejection raised at paragraph 4.b. of the Official Action, claims 2 and 12 do not recite adjusting the diameter of a drill rod while drilling. As more fully discussed previously herein with regard to the objection to the drawing, claims 2 and 12 recite only that flush power is adjusted at least partly as a function of the diameter of a hole/or the diameter of the drill rod used to drill the hole. However, the diameter of the hole and the diameter of the drill rod used to drill the hole will be constant for any given drilling procedure. It is the flush power which is adjusted for different drilling operations for drilling holes of different diameters, and the diameter of the hole being drilled or the rod used to drill a hole does not vary during any given drilling operation. Applicant respectfully requests that the formal grounds of rejection raised against dependent claims 2 and 12 be reconsidered and withdrawn since neither of these claims recite that the diameter of a hole being drilled or the diameter of the drill rod used to drill the hole is varied during a given drilling procedure.

With regard to the formal grounds of rejection raised against dependent claims 9 and 19 at paragraph 4.c. of the Official Action, the form of claims 9 and 19 has been revised to require hole depth to be one of the parameters stored in the computer. This revision to the form of claims 9 and 19 overcomes the formal ground of rejection raised at paragraph 4.c. of the Official Action.

Applicant respectfully submits that the form of all pending claims, as amended herein, complies with 35 U.S.C. Section 112, second paragraph, in all respects.

At page 4, paragraph 6 of the Official Action, claims 1-9, 11-19, and 21-23 have been rejected under 35 U.S.C. Section 102(b) as being anticipated by U.S. Patent No. 3, 550, 697 (Hobhouse).

At page 6, paragraph 8 of the Official Action, claims 10 and 20 have been rejected under 35 U.S.C. Section 103(a) as being obvious over a combination of Hobhouse in view of U.S. Patent No. 6, 681, 875 (Larsson et al.).

For the reasons to be discussed as follows, Applicant respectfully submits that all claims are allowable over the prior art applied in the Official Action.

Claims 1 and 11 are the only independent claims pending in the present application. For the purpose of simplifying the issues, the prior art rejection of the claims will be argued primarily respect to independent claims 1 and 11. If these claims are allowable, the remaining dependent claims will also be allowable, at least for the same reasons as their respective parent independent claims.

Independent claims 1 and 11 have been rejected as being anticipated by Hobhouse. This reference is directed to earth-boring drills/drilling and not specifically to rock drilling, which is the express subject matter of both independent claims 1 and 11. Moreover, Hobhouse discloses a non-percussive turbine driven rotational drill tool down in the hole, with a turbine is driven by the flush medium. As such, flush power cannot be adjusted as a function of the hole depth since the rotational power would then vary by the hole depth which would lead to a non-efficient drilling solution.

The Official Action contends that Hobhouse discloses that the pressure of mud-flush may be employed to control the weight-on-bit, referring to column 2, lines 22-23 of the Hobhouse Specification. The Official Action further concludes that pressure should be a function of depth, and increasing hole depth requires a change in flush power to control weight-on-bit. Therefore, the Official Action concludes that the flush power of Hobhouse is adjusted at least partially as a function of depth.

Applicant respectfully submits that the Official Action misconstrues the teaching of Hobhouse and is improperly relying upon Applicant's own disclosure in the interpretation of the Hobhouse patent. The portion of the Hobhouse Specification relied upon in the Official Action discloses that for controlling the weight-on-bit, increased cutting could be achieved by increased pressure of the flush medium, as that would increase the rotational speed of the drill tool, thereby increasing the cutting which would imply lower weight-on-bit. Thus, the disclosure of Hobhouse teaches controlling the weight-on-bit, and does not disclose the

adjustment of the flush power dependent on the hole depth, as disclosed and claimed by Applicant. The flush power adjustment taught by Hobhouse is a function of the measured weight-on-bit, and not on the depth of the hole being drilled.

Contrary to the disclosure of the Hobhouse patent, independent claims 1 and 11 each expressly recite "adjusting flush power at least partly as a function of hole depth" (claim 1), and "means for adjusting flush power at least partly as a function of hole depth" (claim 11). Thus, for example, in accordance with the method and system defined by independent claims 1 and 11, flush power at a second point of greater depth than a first point will be greater than the flush power at the first point. This feature of the method and system defined by independent claims 1 and 11 is not taught or suggested by the Hobhouse patent for the reasons discussed herein.

Independent claims 1 and 11 have been rejected as being anticipated by Hobhouse. It is well established that a rejection of a claim as being anticipated by a prior art reference requires the Patent and Trademark Office to establish a strict identity of invention between a single applied reference and each rejected claim. Stated in other words, a rejection of a claim as being anticipated by a prior art reference is improper unless a single applied prior art reference discloses all features of the claim, as arranged in the claim. See, for example, Connell v. Sears, Roebuck & Co., 220 USPQ 193 (Fed. Cir. 1983).

In the instant case, Applicant respectfully submits that there is clearly no strict identity of invention between the method defined by independent claim 1, the system defined by independent claim 11, and the disclosure of the Hobhouse patent. Moreover, since Hobhouse does not suggest or recognize adjusting flush power in dependence, at least in part, on hole depth, there is clearly no suggestion in the prior art itself, or within the knowledge of a person of ordinary skill in the relevant art, to modify the disclosure of Hobhouse in any manner rendering independent claims 1 or 11 obvious.

Applicant respectfully submits that independent claims 1 and 11 are in condition for allowance. The remaining dependent claims, which depend directly or indirectly from independent claims 1 or 11 and thus include all features of their respective parent claims, are allowable, at least for the same reasons as independent claims 1 or 11, respectively. Moreover, with regard to the rejection of dependent claims 2 and 12 in the Official Action, Applicant respectfully submits that Hobhouse fails to teach or suggest adjustment of flush power as a function of the drill rod diameter, as expressly recited in these two dependent claims. The torque referred to in the Official Action results from friction by the drill tools against the earth, and is not related to drill rod diameter which is significantly smaller than the drill tool (bit).

For the reasons discussed herein, Applicant respectfully submits that all claims are in condition for allowance, and favorable action is respectfully requested.

Enclosed is a petition to extend the time for responding to the outstanding Official Action two months, through and including September 22, 2009, and the applicable fee for the requested extension of time.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark P. Stone', with a stylized, cursive script.

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